American International Journal of Research in Humanities, Arts and Social Sciences

Available online at http://www.iasir.net

ISSN (Print): 2328-3734, ISSN (Online): 2328-3696, ISSN (CD-ROM): 2328-3688

AIJRHASS is a refereed, indexed, peer-reviewed, multidisciplinary and open access journal published by International Association of Scientific Innovation and Research (IASIR), USA

(An Association Unifying the Sciences, Engineering, and Applied Research)

AGRICULTURE RESOURCES MOBILIZATION THROUGH INDUSTRIAL INFRASTRACTURE IN HARYANA- A REGIONAL ANALYSIS

Satpal singh* ,Dalbir Singh **

* Haryana Administrative services,

**Associate Prof. Deptt. of Geography

Pt. NRS Govt. College Rohtak-124001 (Haryana), INDIA

Abstract: *This paper examines the spatial dimension of agricultural resources mobilization through agro-based industrial infrastructure in Haryana. In order to analysis the agricultural produce mobilization through related industries, a co-efficient of correlation between five major crop-production and the related number of agro-based industries have been worked out. The study is based on secondary sources of data, collected from the statistical abstract of Haryana indicate a co-related values indicate the inferences of variability in agricultural resource mobilization. The numerical values of the coefficient of correlation indicate a regional disparity in varied agricultural production and its produce required by the related agro-based industries. It is therefore, become an imperative to develop industrial infrastructure, and so that the agricultural produce may be mobilized within its vicinal areas. It may also lead to the minimization of transport cost for the farmers. As a result, the farmers match fetches a remunerative price for their agricultural produces.*

Key words: *Agricultural resources, Industrial infrastructure, agro-based industries, Resources mobilization, remunerative price for crops*

I. INTRODUCTION

Haryana emerged as a separate administrative entity in Nov 1, 1996 as a consequence of the spatial reorganization of Punjab State. Since its formation, the "Green Revolution" a breakthrough in agricultural production and productivity has shown a tremendous growth of Rabi and Kharif crops throughout the state. It is because of assuring irrigation water coupled with high yielding varieties of seeds of cereal and the cash crops which have brought a considerable change cropping pattern in Haryana. The research and development programme of Haryana Agriculture University has been rendering its qualitative extension services through its extension centers. As a result it has given rise to multifold growth in agriculture in Haryana. On the other hand, the infrastructural facilities services rendered by Haryana industrial and infrastructural Development Corporation, has been proved conducive to mobilize the agricultural resource in a systematic ways. It is observed that the uneven development of industrial infrastructure has led to considerable regional disparity in agro-based industrial development in Haryana. As a result, the farmers have to transport their produce to distant places, resulted in higher transport cost for the farmers.

In this context, various studies have been carried out by the scholars, authors and researches of various streams; through an adequate light uneven development of infrastructure in different part of India. Misra, B, G.C. Kar & S.N. Misra (2002) examines the trends of development of agro-based industries and its impact on economic development in various pockets of India. The authors have analyzed the agro-based industries and its 'multiplier effect' on the territorial economy. It has given rise to boost up the 'regional economy' of various pockets in India. Similarly, Bhagabat, Patro and Prayasi Nayat (2003) have carried out the employment implications of agro-based industries in India. The authors have conducted a survey of agro-based industries and how these industries have been proved conducive to mobilize the local agricultural resources, it was justified by these authors of different streams. In this 21st century, the era of globalization which has given an impetus to the agro-based industries in almost every region of India? As a result, some of pulling factors have been proved conducive to mobilize. The cereal and the cash crops resulted in boosting the 'regional economy. Gupta S.K. (1993) has examined the locational advantages of development of agro-based industries in different parts of India. Gupta has reviewed to strength, weakness, opportunity and threat to development of agro-based industries in India. He also forecasted the prospects and potential of agro-based industries, especially in the agricultural prosperous regions of 'green-revolution' affected regions of India. Mahajan, O.P. (1993) has reviewed the economic growth of Haryana through agricultural production boosting programmes. Mahajan also focuses on the development of agro-based industries too. It is because of the positive reciprocal relationship which has given rise to multiple growth of agro-based as well agro-industries in Haryana.

Mangal Sen (1983), former industry ministry of Haryana, has discussed the development of agro-based industry and its potential for generating employment in Haryana. The author has justified the sustainable employment potential of agro-based industry. It is because of the 'Sustainable' growth of agriculture, which is based on sustainable 'sustainable agrarian structure' of Haryana. Similarly, Sharma Somnath (1981) has conducted a socioeconomic of agro- industries and its implications for the local economy. He also reviews the potential for removal of the growing employment situation in the rural area. Sharma advocated that the agro-based industries may prove 'blessing' to diversity the surplus labor in the agricultural sector in India.

Bhalla, G.S. & D.S. Tyagi (1989) have worked out the agricultural productivity by forking a composite index for different regions of India. It is a micro-study, based on empirical study, testified with the growth of development of agro-based industries, passed through various phases. In this study, the factors affecting the agro-based industries have been analyzed under varied socioeconomic conditions. How the production and productivity of agro-based industries is influenced by fluctuation of agricultural production in an area? It has been reviewed by the authors.

Kamble, Purnima, D Makandar, N.M. (2011) have reviewed the sugar industry in India. The authors have tried to establish the 'Cause-effect relationship' of various institutional factors which affect the behavior of production of sugar-industry in India. Similar, Satya Sundaram (2011) has presented holistic views of the sugar industry of India.

Sharma, Hemlata (2011) has examined the factor substitution and price elasticity of demand in Haryana manufacturing Industries. She has carried out the study on fluctuating the price of their products of some of agro-based industries and its effects on production. Deepa, N (2011) has reviewed the impact of infrastructure on the industrial development of Andhra Pradesh. She has carried out a 'regional study' on development of Industrial infrastructure and its impacts on growth and development of industry in Andhra Pradesh.

Meena, P.C, P Kumar, Reddy G.P. (2010) have examined the factors, affect the demand and production of wheat in western India Which includes Punjab, Haryana, western Uttar Pradesh and areas of Rajasthan. The authors have analyzed the demand of wheat influenced by the socioeconomic and political factors in wheat producing western states of India. The authors also analyzed the locational aspects of wheat based agro-based industries. These industries include food-processing industries, flour mills, Maida mills etc.

S. Ramakrishna and V. Karunakar (2006) have evaluated the agricultural resources and its impacts on agro-based industries in the Telengana region. Keeping in view the existing agricultural resources with its total cropped area 53 lacs hectare, constitute 8.3% of the total area, has a good potential for developing agro-based industries. The whole region is blessed with suitable physiographic and agronomic conditions for cereals and pulses, maize, ragi, rise and Jowar. It is therefore, expected to pave the way to have an impact on the agro-based industries.

Hence, it is obvious that the production of different crops in a region in affected by the facilities and available of industrial infrastructure within specific areas. It has been cleared from the various studies, carried out by the economists, agronomists, business professionals and the researchers in related fields. Most of the authors have tried to justify the cause effect relationship between the agricultural resources and its mobilization through industrial infrastructure available in the region, where both variables work together. Unlike the system of traditional agricultural operations, marketing of the produce and storage facilities are all managed by the farmers and industrial units which plays an important role in their modern agricultural system. This has given a special significance to industries agro-based industries, agro industries and agro-business etc.

II. Methods & Material

In the present study which to analyze a 'catalytic role' of agricultural resource mobilization through industrial infrastructural facilities available within the district, it is very essential to under aiming at agricultural resource-mobilization, five major crops which includes rice, wheat, oilseeds, cotton and sugar cane have been chosen for the study. On the other hand, the related agro-based industries, related to respective crops has also selected for drawing the inferences on 'cause-effect relationship between the two selected variables. These agro-based industries are rice-shellers, food processing industries, village oil-Ghani, cotton textile/weaving khaddi and sugar industry/khand sari industry. In this context, the other infrastructural facilities like roads, cold storage facilities, grain market also play a significant role to mobilize the agricultural produce within the regions. The crops and the related agro-based industries are as follows.

Table-1

Sr. No.	Name of Crop	Related agro-based industry
1.	Rice	Rice-Sheeler/mill/rice oil extracting mils/Gatta Industries
2.	Wheat	Food processing industry, flour mills/Maida mills
3.	Oil seeds	Mustards, sunflower based village oil ghani/oil mills etc.
4.	Cotton	Cotton textile, weaving Khaddi/weaving mills etc.
5.	Sugar Cane	Sugar mills/Khand sari factories/gud making small scale manufacturers.

In order to analysis of the dynamics of interaction between agricultural production and related agro-based industries, the relationship worked out by the co-efficient of correlation formula as follows.

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2 . \sum dy^2}}$$

In order to categories the districts in accordance with the degree of correlation between the two variables, the districts have been classified into (1) very high (2), high (3), medium (4), low (5), very low. In this context, various degrees of co-efficient of correlation indicates a varied level of agricultural resource mobilization in different districts of Haryana.

In order to find out the problematic areas of agriculture mobility, an informal talk with the farmers have paved the way to find out the possible solution to make an improvement, proved fruitful. This informal talk proved conducive to investigate the main cause of the not receiving the remunerative price by the farmers.

In order to draw the inferences of 'cost-effectiveness' of transport for the farmers, the following district-wise production of five major crops have been taken into consideration. These crops are Rice, wheat, oilseeds, cotton and sugar cane. In this context, district-wise various production figures of these crops have been tabulated as follows:

Sr.No	District	Rice	Wheat	Oil seeds	Cotton	Sugarcane
1.	Ambala	233	267	2.00	0.50	82.00
2.	Panchkula	18.00	40.00	1.00	0.50	6.00
3.	YamunaNagar	191	245	2.00	0.50	260
4.	Kurukshtra	467	463	1.00	0.25	260
5.	Kaithal	400	720	1.00	10.50	92.00
6.	Karnal	567	420	1.00	0.50	75.00
7.	Panipat	164	365	1.00	0.50	45.00
8.	Sonepat	124	539	6.00	7.00	93.00
9.	Rohtak	26	320	32.00	24.00	63.00
10.	Jhajjar	18.00	305	73.00	7.00	9.00
11.	Faridabad	40.00	226	6.00	0.60	7.00
12.	Palwal	30.00	301	9.00	6.40	24.00
13.	Gurgaon	19.00	72	28.00	0.50	0.50
14.	Rewari	3.00	186	100.00	27.00	0.50
15.	Mahandergarh	----	154	120	30.00	5.0
16.	Bhiwani	14.00	425	200	176	38.0
17.	Jind	201	866	19.00	148	9.00
18.	Hissar	63.00	841	81.0	461	9.00
19.	Fatehabad	280	727	19.0	424	0.10
20.	Sirsa	280	970	99.0	242	0.4
21.	Mewat	-----	338	47	41	1.00

Table showing District-wise production of five major crops in Haryana (in 000 tons)

S. No.	Distt	Rice shellers	Food processing ind.	Oil mills/village oil ghani	Cotton textile weaving mills	Sugar mills Khandsari& gud making
1	Ambala	5	57	14	40	1.5
2	Panchkula	1	20	3	2.5	10
3	YamunaNagar	18	57	7	8	34.73
4	Kurukshtra	10	68	20	2	11.75
5	Kaithal	11	58	22	2	1.75
6	Karnal	20	96	18	32	4.85
7	Panipat	21	52	30	39	4.85
8	Sonepat	8	34	14	21	1.5
9	Rohtak	2	27	31	12	6.9
10	Jhajjar	5	20	26	11	0.5
11	Faridabad	2	20	26	12	0.2
12	Palwal	3	60	14	82	3.4
13	Gurgaon	6	42	27	60	0.5
14	Rewari	2	21	28	8	0.5
15	Mahendrgarh	….	30	30	10	0.5
16	Bhiwani	3	24	32	19	0.5
17	Jind	26	71	20	30	4.95
18	Hissar	8	71	28	44	0.5
19	Fatehabad	18	7	33	44	5
20	Sirsa	31	53	33	28	0.4
21	Mawat	….	8	31	11	0

Table showing District -wise distribution of no. of unit's related agro based industries in Haryana

Source: Statistical Abstract Haryana 2012.

Sr. No.	Distt	Correlation Value
1	Ambala	+0.57
2	Panchkula	+0.33
3	YamunaNagar	+0.68
4	Kurukshetra	+0.69
5	Kaithal	+0.64
6	Karnal	+0.70
7	Panipat	+0.70
8	Sonepat	+0.48
9	Rohtak	+0.55
10	Jhajjar	+0.57
11	Faridabad	+0.31
12	Palwal	+0.37
13	Gurgaon	+0.21
14	Rewari	+0.52
15	Mahandergarh	+0.57
16	Bhiwani	+0.52
17	Jind	+0.8
18	Hissar	+0.76
19	Fatehabad	+0.35
20	Sirsa	+0.33
21	Mewat	+0.18

Table showing Distt. wise correlation values between five major crops and their related agro industries in Haryana

The correlation values of the productions of five major crops of each district and the related agro-based industry indicate a variety of agricultural resource mobilization through agro-based industries in Haryana. In this context, poor correlation indicates either dearth of agriculture production or industrial infrastructure or both and it is vice –versa.

III. Results and Discussion

Keeping in view the statistical figures on agricultural production of the 'agricultural produce' which includes rice, wheat, oilseeds, cotton and sugar cane, the following tabulated figures shows the agricultural production of five major crops and related agro-based industries are as follows.

In Haryana there are 116 foods and Agro based industries which are operating under Khadi & Village Industries. The numerical strength of food products and Beverage is 685. On the other hand the manufacturing of a Textile number of industries is 956. The no of spinning mills are 62. Lastly, the numbers of sugar industries are working under cooperative operation 10 + 4 private sugar mills, total 14.

We may classify these districts in accordance with the degree of correlation between the two variables. This relationship may be summed up as follows:

Sr. No.	**Degree of Correlation Value**	**No of Districts**
1.	Very high degree of correlation (0.70 & above)	2, which includes Hissar and Jind
2.	High degree of correlation (between +0.65 to 0.75	3, which includes Yamuna Nagar, Kurukshetra, Karnal
3.	Medium degree of Correlation value (Between +0.55 to 0.64)	5, which includes Ambala, Kaithal, Panipat, Jhajjar & Mahendragarh.
4.	Low degree of correlation (between +0.45 to +0.54)	4, which includes Rohtak, Sonipat, Rewari & Bhiwani
5.	Very low degree of Correlation (below +0.45)	7, which includes Panchkula, Gurgaon, Sirsa, Mewat, Fatehabad, Palwal & Faridabad
	Total District	**21**

1. Very high degree of co-efficient of correlation value is covered by the districts Hissar and Jind. These districts are characterized by high levels of agricultural production and most of the agricultural production is utilized by the various agro-based industries, located within the district itself. Hissar, being vast arable land coupled with assured irrigation and extension services rendered by Haryana Agricultural University have given rise to agricultural productivity within these districts. On the other hand, the whole district is blessed with numerous of agro-based industries, resulted in the best mobilization of major parts of the agricultural produce within the district itself Bhalla G.S. (1989) has justified the 'Sustainable growth of agricultural development through some of institutional reforms, taken place from time to time. As a result, a sustainable growth of agricultural and productivity have been experienced within these districts. On the industrial front, the agro-based industries have shown considerable growth-trends within these districts, cumulatively given rise to a high degree of co-efficient of correlation within these districts.
2. High degree of correlation value is covered by the Districts which include Yamuna Nagar, Kurukshetra and Karnal. These districts enjoy assured irrigation with good alluvial soil, produced by Markanda & Yamuna Rivers. Karnal which is a centre of some of prominent agricultural research stations like

Central of salinity soil Research institute, National Wheat Research Institute and the National Dairy Research Institute have played a vital role for practicing 'mixed farming 'within these districts. Whole region is characterized by multiple cropping which has given rise to develop a sizable numerical strength of agro-based industries within these districts.

3. Medium degree of correlation value is covered by the districts which include five districts, namely Ambala, Kaithal, Panipat, Jhajjar and Mehendragarh. All these districts enjoy locational advantages of good production of dominant crops which is a result of assuring irrigation and good services rendered by HAU Agricultural Scientists. District Mahender garh; being a dry land area the productivity of oil seeds is often given good production. As a result, a sizable numerical strength of oil seeds based, 'village oil Ghani' given rise to make an island of prosperity as justified by Bhalla, Sheila (1986). She has evaluated this region and projected a promising picture for agricultural development.
4. Low degree of correlation value is covered by the four districts which include Rohtak, Faridabad, Rewari and Bhiwani. The productivity of the five major crops, no doubt giving sustainable growth, but recently, within the districts Rohtak, Faridabad and Rewari, a fast land use change has taken within these three districts, with the result the agricultural production is affected by these institutional changes. District Bhiwani particularly Bhadhra, Siwani, Behal, Buani-Khera, Tosham and Loharu areas are characterized by sandy soil, low rainfall, lack of industrial infrastructure have given rise to low degree of correlation between agricultural production and development of agro-based industries within Bhiwani district.
5. Very low degree of correlation value is covered by the districts namely Panchkula, Gurgaon, Sirsa, Fatehabad, Faridabad, Palwal and Mewat. In case of Panchkula, the rural areas mostly covered by the blocks Pinjore, Morni and Barwala. The agricultural productivity within these blocks, characterized by undulating topography, no soured irrigation, the small size of land holdings has given rise low agricultural production and productivity. Through Panchkula is characterized by good industrial base, but the development of agro-based industries, is not backed by good agricultural within the venial area. In case of Gurgaon the fast change in land-use has taken place during last two decades due to high rise in the price of land, the agricultural land is converting the fast into residential/industrial land. In case of Sirsa and Fatehabad, no doubt the 'agricultural products' shown a considerable growth during the last two decades, but initiation of agro-based industry is influenced by the 'mid-set' of the people, who resides within these two districts. The countryside is characterized by agrarian structure. It is because of lack of entrepreneurship among the people and some of industrial pit falls giving rise to not develop agro-based industries within these districts have given rise to keep the correlation value very low.

In case of 'Mewat district' where there is almost nil sources of irrigation from the canal or wells. Only a small fringe area along with Aravalli hills is facilitated with ground water, but it is sufficient for only 2% of the required irrigation area. The rest of the land of 'Mewat' is rain fed. It is because of the sub-surface water is saline and not suits to almost every crops which are grown in Mewat. There are two dominant crops, wheat and Mustard, give rood or bad production, depend upon the monsoon. In case of agro-based industrial development, it is observed that the low literacy rates, the general backwardness of the area, lack of incentives and some of existing institutional pitfalls have given rise to discouraging of development of industries within the Mewat rigion. All these factors have given rise to keep the low degree of correlation (+0.18) within the Mewat district of Haryana.

Hence, it is obvious from the studies carried out for various districts of Haryana, indicates that the districts which have low and very low degree of correlation between the production of major crops and the development of agro-based industries within these districts, indicate that the agricultural produce is tending to go out of district. It is because of partly because of lack of entrepreneurship and partly because of a lack of industrial infrastructure available within a particular district. There is example, the districts Sirsa, Fatehabad, Bhiwani and Rewari. Though there is good potential for developing agro-based industries within these districts, provided an incentive and industrial development oriented make available within these districts. The existing tendency will lead to receiving less remunerative price of their agricultural produce, because of the existence of middlemen in the local grain market. If the agro-based industries are developed, as a result, the maximum marketable surplus of their produce will be sold directly to the agro-based industry owners. It is expected to pave the way to fetch a remunerative price for their agricultural produce at their door steps. Secondly, the development of agro-based industries within the vicinal region is expected to save their transport cost too .Thirdly, it will lead to save the time, so that the farmers may spend their time in their other productive works.
In the Mewat district, where the correlation value is lowest (+0.18) indicate a very pathetic situation of agricultural production and the development of agro-based industries. In this context, the mustard and wheat are the dominant crops, grown under dry land conditions. It is therefore, we may observe that the 'village oil-ghani' and the small scale 'flour-mills' can be established throughout Mewat region. On the bases of 'oil-cake, 'which is left by the 'Mustard oil expellers which can be used for feeding the 'buffalos' and 'cow' for dairy. It is

expected to boost up the whole Mewat economy, provide an effective planning may be formulated and executed in accordance with the local conditions only.

IV. Conclusion

On the basis of the study, carried out for all the 21 districts of Haryana, we may conclude that the districts which have low and very low coefficient of correlation value between agricultural production and development of agro-based industries of Haryana. It has observed that the tendency of considerable extent of agricultural produce is moving out of district. They are receiving less remunerative price of their agricultural produce. It is therefore, suggested that the districts which have lacking of industrial infrastructural facilities, should be made available with all required facilities within the district itself. The district authorities should provide good infrastructure facilities, so that the agricultural resource may be mobilized within the district itself and the farmers may receive a remunerative price for their agricultural produce. It also ensures to reduce the transport cost too. It will be possible when the state policy maker think on balance regional development and boosting up the district economy through available agricultural resources. The southwestern part of Haryana, which includes Bhiwani, Jhajjar, Gurgaon, Mewat, Palwal, Rewari and Mahendragarh districts, have a great potential area in 1.60 above the value of concentration index, (Kumar Sunil and M.S. Jaglan, 2008) for this southwestern region. It is a core area of soil seed production since early 1980s, the yield of rapeseeds and mustard has increased by 332% per annum. This is a promising region an industrial infrastructure development may ensure to take the 'hidden potential' for oilseeds based agro-based industries within this region. Presently, this region is characterized by low to very low of degree of correlation, but it has great potential to mobilize its agricultural resources through developing the industrial infrastructure within the southwestern region of Haryana. It is suggested that the districts which show a low degree of the coefficient of correlation indicate either low agricultural production or low development of industrial infrastructure. It is therefore, an imperative to make up the deficiency of agricultural production as well as the industrial infrastructure, so that the level of agricultural resources may be mobilized efficiently with the industrial infrastructure within vicinal areas in through Haryana.

References

1. Bhagabata, Patro and Preyasi Nayat (2003) ' Employment implications of Agro-based industries in India'- Agro-based industries and Economic Development-A vision of the 21st Century B. Mishra and others, Deep and Deep Publications, New Delhi
2. Bhalla, G.S. & D.S. Tyagi (1989)' Pattern in Indian Agricultural Development: A District level study' Institute for studies in Industrial Development, New Delhi
3. Chaturvedi, Richa and Mishra, S.P. (2008), 'Regional disparities in Infrastructural Development in Allahabad District: Using G.I.S. Technique'- Paper presented in 30th India Geography Congress, on Dec. 19-21, 2008 at Allahabad University, Allahabad.
4. Davis, Stephan J (2011) 'Production problems of Agro-based food industries: A micro study'-Southern Economist, 50 (6), July 15, 2011 p. 11-14.
5. Deepa, N. (2011) 'impact of infrastructure on industrial development in Andhra Pradesh' Southern Economist 49 (23) April 1, 2011 p. 11-13.
6. Gupta, S.K. (1993), 'Development of Agro-based industries, Retrospect and Prospects' Deep and Deep Publications, New Delhi.
7. Kamble, Purnima D, 'Makandar, N.M. 'Sugar Industries in India: An overview' Southern Economist 50 (7), Aug, 1, 2011, p. 27-31
8. Meena, P.C, P. Kumar, Reddy G.P. (2010), 'Factor demand and output supply of wheat in western India', Indian Journal of Agricultural Economics, 65 (4), Oct-Dec, 2010, p. 739-746.
9. Mahajan, O.P. (1982), 'Economic Growth in Haryana' Journal of Haryana Studies Vol. XIV no. 1 & II (1982).
10. Son, Mangal (1983), 'Agro-based industries in Haryana Growth in output and Development, 'Directorate of Economic and Statistics, Department of Agriculture, Govt. of India- Agricultural situation in India, July 1983.
11. Sharma, Somnath (1981), 'Socioeconomic study of Agro-industries' Mittal Publications, New Delhi.
12. Sharma Hemlata (2011), 'Factor –substitution and price-elasticity of demand in Haryana manufacturing Industries'. The 1 UP Journal of Applied Economics 10 (2), April 2011 p 74-90.
13. Singh, Sushil Kumar, and Jaglan, M.S. (2008) 'Oil Seeds Cultivation and its contribution in Agricultural Development of Haryana: A Spatio-temporal study.' The paper presented in 30th Indian Geography Congress, on Dec. 19-21, 2008 at Allahabad University, Allahabad.
14. S. Rama Krishna and V. Karukar (2006), 'Agricultural Resources and its impact on agro-based industries in Telangana region' Paper presented in Ist international Geography Congress, Held on Oct 5-7, 2006, at Osmania University, Hydrabad.
15. Sundaram, Satya (2011), 'Sugar Industry: A holistic view: Facts for you, 31 (10), July 2011, p. 14-16.

Reports

1. Govt. of Haryana 'Directorate of Agriculture & Food Products Statistics on Agricultural Production in Haryana (Data Mineo) Chandigarh (2012).
2. Annual Report of K.V.I. Commission, year 2012.
3. Statistical Abstract of Haryana, year 2012.